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## Social cognition of children and young adults in context

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## SUMMARY

Social-cognitive skills are crucial to navigate through the social dimensions of life. Extensive insights exist on the development of these skills, including on the interconnections between social cognition and social relationships or behavior. A next important step, however, is to discover how social-cognitive skills are embedded in the diversity and complexity of the everyday context in which they are applied. The research described in this thesis concerns this contextual embeddedness of primarily the social-cognitive skill of mental state reading. This is studied from an educational neuropsychology perspective, which combines the more fundamental interest and approach from neuropsychology with educational sciences' interest in a specific context or environment. The main aims of this thesis were to investigate mental state reading of children and young adults embedded in context and to explore an educational neuropsychology approach on this topic.

**Chapter 1** presents a general introduction to this thesis. It includes a theoretical background on social cognition and the specific skill of mental state reading. Social cognition is introduced as a set of cognitive processes, which can be used to infer, understand and balance the perspectives and needs of oneself and of others within any social interaction. One such specific process central to this thesis is mental state reading. Mental state reading refers to the ability to infer mental states from facial expressions. Further, it is explained in this chapter how the interactions in which mental state reading and social cognition skills in general are applied are always embedded within an immediate situation which in turn is surrounded by wider contexts. This contextual embeddedness can interact with social cognition in various ways. An educational neuropsychology perspective can be helpful to investigate social cognition within context because of its connection between a more fundamental (neuropsychology) and more applied (educational sciences) discipline. Finally, the aims of this thesis are described and an overview of the chapters is given.

**Chapter 2** contains a theoretical reflection on the discipline of educational neuroscience. The connection between the fundamental discipline of neuroscience and the more applied discipline of educational sciences is examined. The aim was to gain insight in the different positions educational neuroscience can take in relation to the fields that are involved: neuroscience, educational sciences and educational practice. A distinction between such different positions can be helpful to clarify the aim of educational neuroscience and the possibilities the field has to transfer to educational practice. Within this transfer factual (neuromyths) and logical (neuro-misconceptions) confusions have been identified, which are important issues in the discussion on the value of educational neuroscience. The reflection showed that three positions can be distinguished for the field: educational neuroscience can be part of neuroscience, it can be part of educational sciences, and it can be an independent discipline. These positions differ mainly in

the extent to which the transfer to educational practice is included in the research question and approach. The three positions can be seen as equally valid and valuable options for educational neuroscience, however it can be stressed that it is important to be aware of and explicit about what position a certain educational neuroscience study takes. This clarifies the possibilities the study has especially concerning the transfer of findings to educational practice.

**Chapter 3** reports on children's mental state reading in the context of their interactions with other children and with adults. Three sub studies are described. The Reading the Mind in the Eyes (RME), which is commonly used to measure mental state reading, consists of pictures of adults' eyes accompanied by sets of target and foil mental states. This task was adapted into a version with children's eyes (study 1). In the new version the sets of target and foil mental states were kept, replacing only the pictures. Next, the original and adapted version were compared in a group of 6-10 year olds ( $N = 718$ , study 2) and 8-14 year olds ( $N = 182$ , study 3). It was shown that children from both age groups performed better on the new RME with children's eyes than on the original RME with adults' eyes. Further, answer distributions at the item level of the new RME were similar to previous reports on the task, and test re-test reliability (measured in a subgroup of the older children) was adequate. The higher performance of children reading children's eyes can be seen as an indication for the presence here of the contextual mechanism of familiarity. This mechanism entails that individuals' emotion or mental state recognition is enhanced within interactions in which they encounter emotional expressions styles they are familiar with. It is plausible that children are more familiar with mental state expression styles of children than of adults because of a developmental difference in expression and because of the nature of the relationship between adults and children and finally because of the specific roles that adults have in children's lives. Further, at the methodological level this implies that possibly children's daily mental state reading is more accurately captured with the new version of RME that measures their ability to read children's eyes.

**Chapter 4** examined mental state reading in the context of interactions of young adults with different cultural backgrounds. Young adults between 19 and 24 years old with an Antillean-Dutch ( $n = 128$ ), Moroccan-Dutch ( $n = 204$ ) and Dutch ( $n = 349$ ) background completed different versions of the RME in order to assess their cross-cultural mental state reading. These versions depicted Antillean, Moroccan or Western eyes. Cross-cultural mental state reading capabilities can be interpreted as a reflection of orientation towards these different cultures, thus indicating acculturation within this social-cognitive ability. It was shown that the Dutch young adults were better at reading mental states in Western faces compared to either Antillean or Moroccan faces. The young adults with an Antillean-Dutch and Moroccan-Dutch background however performed equally well reading Antillean and Western or Moroccan and Western eyes. Further,

associations were explored but not consistently found between mental state reading and behavioral and psychological acculturation measures in these three groups. These findings indicate first of all the presence of the contextual mechanism of familiarity in mental state reading of young adults with a Dutch background, suggesting their higher familiarity with the Western expression style. The lack of this mechanism in both groups with a bicultural background confirms the relatively high orientation towards both cultures noted in previous research on different facets of acculturation for individuals with an Antillean-Dutch or Moroccan-Dutch background. Second, despite the lack of clear patterns in the current associations between different facets of acculturation (within cross-cultural mental state reading, and within behavioral and psychological measures), such explorations can be valuable both to understand bicultural groups and to investigate the interplay of different contextual effects on social cognition.

**Chapter 5** provides an examination of children's mental state reading and social mindfulness skill in relation to their position in the peer and friendship network of their class. The two social-cognitive skills were measured in a group of 793 children between 6 and 10 years old, attending 44 classes in the 2nd grade of elementary school. The children also completed peer nomination questionnaires to assess their reciprocal friendship bonds as well one-sided or reciprocated peer bonds with the children in their class. Using a social network approach, these nominations were processed into Bonacich centrality scores to reflect children's network positions in terms of the number of their direct and indirect connections with the other children. The findings confirmed only a non-significant trend between friendship network centrality and mental state reading. Position in peer network was not related to mental state reading, and neither position in the peer nor position in the friendship network was related to social mindfulness skill. This lack of associations between young children's social-cognitive skills and their peer and friendship network position can be partly explained by considerations on the understanding and measurement of the social relationships as well as on the social-cognitive factors. A more nuanced understanding of these relationships and skills can increase insight in precisely which skills contribute to which specific characteristics of for instance a friendship network. It is also possible that the age of the children plays a role. A social network perspective on relationships and social cognition is especially valuable because such a perspective can increase insight in the role social-cognitive skills can have in the management of a complex interconnected whole of relationships. Perhaps however such complex interconnectedness of relationships is not present yet in the social lives of young children.

**Chapter 6** integrates the main findings from this thesis and discusses these in light of the thesis' aims. The discussion points focus primarily on the role of the mechanism of familiarity in the social interactions of children (with other children and with adults) and young adults (with other young adults with different

cultural backgrounds) and on children's social cognition at school. Further, the empirical chapters are evaluated in terms of their application of an interdisciplinary educational neuropsychology perspective, building from the insights from the theoretical reflection on educational neuroscience. This indicates that these empirical studies can be identified as relatively fundamental educational research. Finally, a reflection is included on the approach and methodology and recommendations for future studies as well as practical implications are described.